

The Use of Weave and Material for Effects in Artificial Silk Fabrics

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In a fabric of artificial silk material and weave stand to one another not merely in a definite reciprocal relation, as is, indeed, the case with all other kinds of fabric also, but quite peculiar effects can be produced in an artificial silk fabric when both factors are properly and skilfully applied. Effects of like character cannot be achieved even with natural silk, for it is one of the best characteristics of artificial silk that it reacts effectively even to the very simplest expedients of the art of weaving. It is possible, for instance, by the use of the simplest of all weaves, the tabby weave, to make such diverse fabrics of striking effect with artificial silk, either by itself or in combination, that the design can be enlivened at will by new combinations of the material.

These effects are very much heightened in Jacquard fabrics, in which the weave by means of the figured pattern is not only able to influence the material in the most advantageous manner, but also serves to increase the effect of the lustre. The interplay of two or more fundamentally different weaves is often very important and is sometimes indeed the sole and decisive factor for evaluating the material in warp and weft.

A pure silk cloth is generally preferred to a union fabric, which is more difficult to deal with, but just the reverse applies with artificial silk, for it is just the mixed fabrics which are favoured owing to the greater capability of expression peculiar to them. Novelties can

often be created in this line with simple means and cheaply, such, for instance, as the new fabric "Ramagé" shows, which combines in a very effective manner either artificial silk with wool or artificial silk with cotton.

More deserving of attention from the point of view of weaving technique are, however, the fabrics composed entirely of artificial silk, because their design presents much more difficulty than does that of the mixed fabrics. These latter have a material at hand for the most difficult part of the weave, that is to say, the warp, in the way of wool, cotton, etc., which offers no great resistance to being incorporated in the fabric. With artificial silk this is very different and it can be woven at all satisfactorily only by taking the utmost care and by preparing it suitably beforehand.

Difficulty upon difficulty may crop up when artificial silk is used for warp, although the quality is by no means inferior. Consequently it is generally customary to prepare the warp beforehand, either in the hank in the dyehouse, or by sizing in the weaving mill. This treatment by dressing, sizing, or otherwise, is all the more necessary when the conditions are not quite favourable owing to the nature of the weave and the closeness of the warp. Close weaves or the crossing of threads and a closely set warp are two great enemies of artificial silk. One-sided combinations of threads in patterns or figured designs also act unfavourably upon artificial silk warp because that part of the warp which is

woven less closely soon tends to sag and the slack threads cause trouble just as do the warp threads which become tighter and tighter owing to the closer weaves. Care must therefore be taken in designing patterns for Jacquard fabrics to make sure, first of all, that the design units are distributed as regularly as can be over the breadth of the pattern or the repeat. Square divisions have proved themselves to be most suitable for this purpose and most numerous variations of patterns of this type have been brought out. They are in particular favour for the cravat industry, because these are generally woven with comparatively close warps so that suitable weaves and patterns must be carefully chosen. A characteristic style is the draughts board pattern, Figure 1. This class of patterns is to be met with nowadays much oftener than used to be the case, chiefly in artificial silk fabrics, because it permits most readily of a balanced interplay of weaves, and it is to be found in every imaginable shape and hue. The weaves generally taken are satin, taffeta, and twill.

If cross stripes generally of a contrasting colour and in a special weave are used for relief, as for example in Figure 1, it is as a rule necessary to have a special warp beam for these artificial silk warp stripes. If these effect stripes also are partly used in the foundation weave, as is shown by Figure 2, then the close plain weave is missing in the other half, so that the floating threads soon sag when they run from the same beam as the foundation weave and the tension is not specially regulated. As artificial silk is not elastic, it is well in such a case to consider beforehand how far it is possible to treat both groups of threads in the same way from the point of view of weaving technique, because the necessary separation begins with the warping.

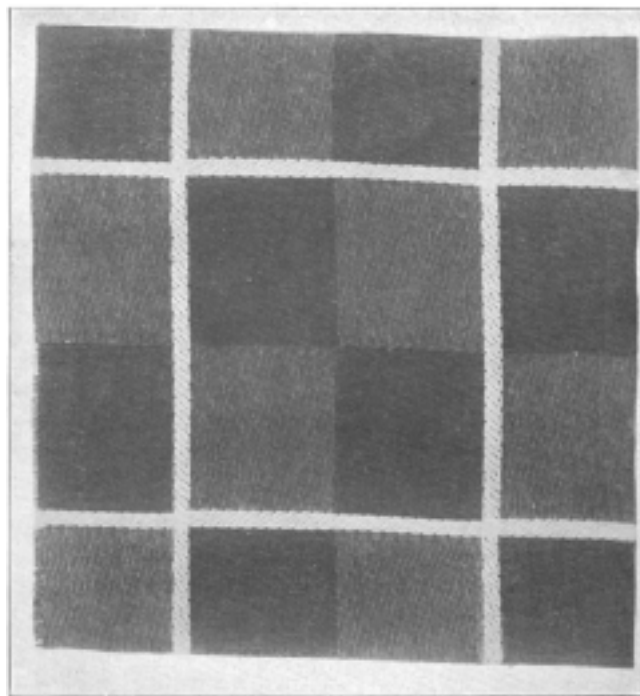


Fig. 1

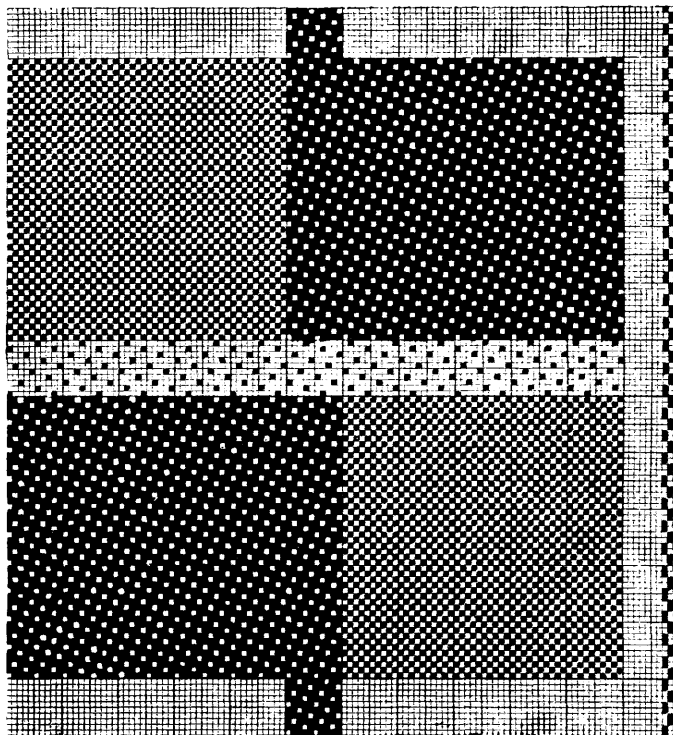


Fig. 2

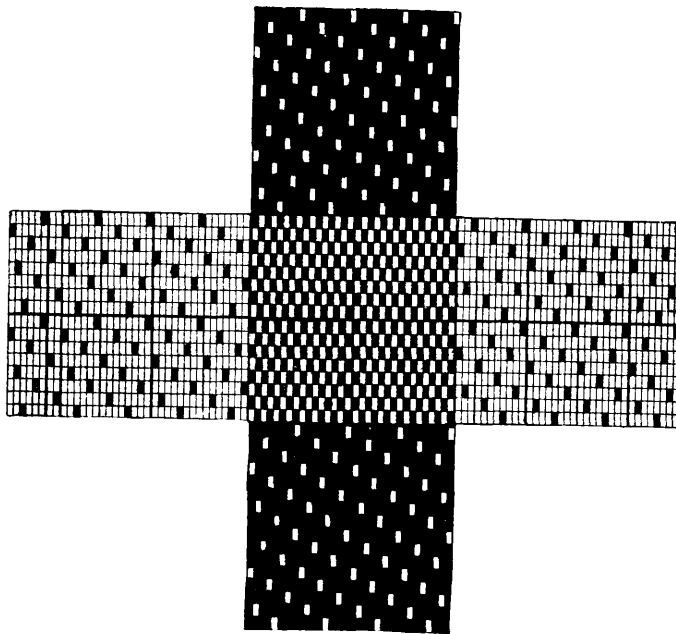


Fig. 3

For these effect stripes, whether warp or weft, weaves must be chosen which are suitable in character. In the weave design shown in Figure 2 the white warp stripe is marked by colouring over and is crossed by the white weft stripes, in satin weave. At the junction of the two stripes the warp stripe is covered by the weft and is thus interrupted. The reverse may also happen, so that the weft floats and the warp weaves all the way. When different colours and broader stripes are used, these crossings are employed to produce shot

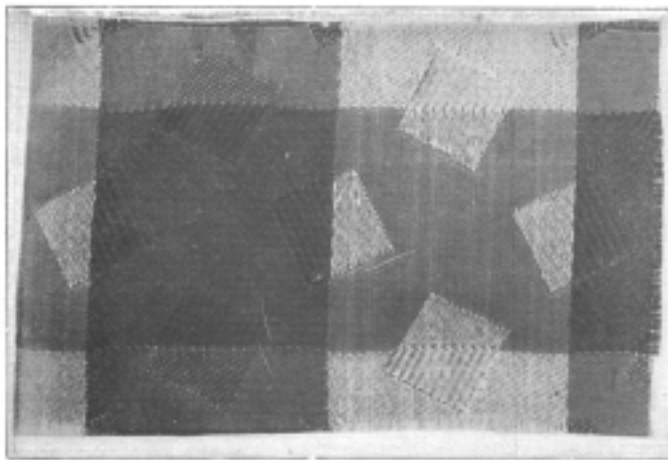


Fig. 4

effects which cannot be done with a one face satin weave, but only with a double-face weave, for which the plain weave comes into consideration.

Figure 3 shows a weave effect of this type in which a broad warp stripe, for example, blue, alternates with a similar weft stripe in green. The two stripes mix with one another at the plain weave interlacing point to form a shot effect which has much the same appearance as a shot silk.

It is a disadvantage of these blocks that the warp and weft threads do not cluster together at this point as they do, for instance, in the wide and loosely weaving satins. Consequently the warp and weft of stripes which have been woven pretty wide and close are inclined to crowd at the place in question, so that the block appears rather creased and crumpled. There is further the danger that artificial silk, which frays very readily, may cause irregularities in the weave when the threads are

so crowded, giving rise to nests and loose threads which are very prejudicial to the appearance of the goods. In this event the pattern card must be altered, even if it has already been cut, for instance, by taking a double-tabby weave instead of a tabby weave, which can be done without much difficulty. The shot effect, however, with double weaves is not quite the same as with a satin weave.

The squares of the weave plan are often provided with jacquard figured patterns, as shown in Figure 4. In order to give these jacquard patterns an appliqué figuring, they are made to change their weave when they enter another field, in other words the figure is shown up upon the ground by a different intercrossing of the threads. If the figure appears on a plain weave in satin, then it changes to a twill on a satin ground. Figure 5 shows the design plan as well as the corresponding relation between warp and weft.

It can further be seen from Figure 4 that the jacquard figures have been systematically distributed so that no irregular weaves can appear in the design which

would be detrimental to the employment of artificial silk.

For this reason small patterns are much in favour for artificial silk cloths, so as to get as lively a woven surface as possible like Figure 6, for example, in which each smallest part of the weave seems to be continually in motion. It can always be observed that the weave effects produced by an artificial silk warp dominate on the face of the goods. These warp effects then usually lie on the surface in the form of irregular small weave blocks, whereby they preserve their own colour in coloured fabrics and make an effective contrast with the mixed shade of the other parts of the weave.

It is surprising to find in all artificial silk cloths that the number of ends per centimetre is comparatively so low, more than 50 not being often met with. This was not due to chance, but was the result of the marked sensitiveness of the artificial silk warp. Although it was not merely the aim to use artificial silk for the warp without doubling it, but this was actually done, it made no change in the stubborn nature of the artificial silk. At the present time artificial silk is on the highroad to being perfected and improvements are continually being made, so that it will not be long before this last impediment in the way of the universal application of artificial silk will have vanished. It is already possible, by the use of suitable qualities of artificial silk, to work without trouble with 100 ends and more per centimetre. This brings the question of the replacement of natural silk by artificial silk well to the front. The idea has often been rejected with the argument that artificial silk can never hope to rival natural silk because it is an independent material of quite a different nature which above all does not possess the qualities and the value of natural silk. Such an opinion is today, when the state of the production of artificial silk is borne in mind, at least antiquated and

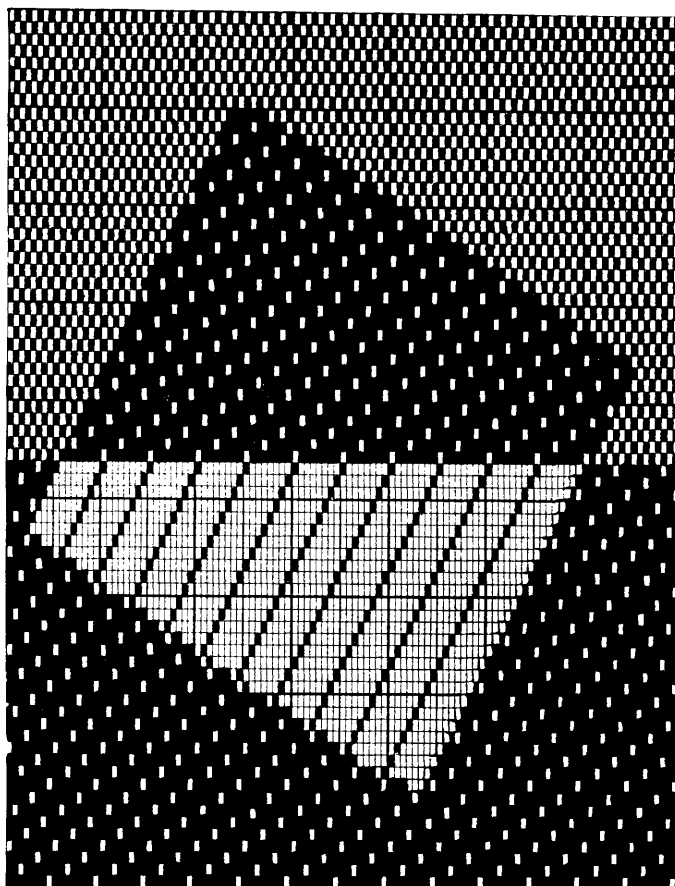


Fig. 5

is no longer sound because the producers of artificial silk are today striving to make it qualitatively more and more like natural silk. In fact they have for the most part been successful in their endeavours, and natural silk has even been improved upon in certain particulars.

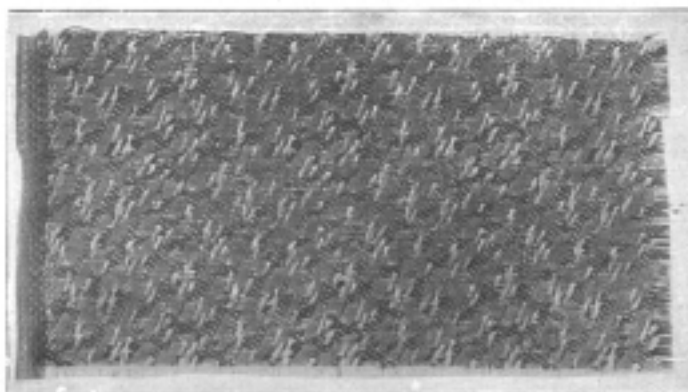


Fig. 6

It is well known to all engaged in the trade that it is more advantageous to work with artificial tram than with natural tram silk and this applies particularly to the weaving of coloured silk, which was often subject to trouble caused by the methods of weighting the silk. Nowadays only very little natural silk is used, and that is confined to organzine for close warps. But it has been found possible to produce a fine artificial silk and a warp is obtainable which is capable of being worked up just as well as the expensive doubled organzine, so that this too will disappear in the course of time, just as tram has been disappearing for years and even decades. It is merely a question of time, because further great advances in the production of artificial silk are before us which in the near future

will open new vistas for its use in the textile industry. Finally artificial silk will give rise to new types of fabric unrivalled for compactness, strength, and cheapness.

At the present time endeavours are being made to select weaves for artificial silk, especially for artificial silk warp, which will treat the material as gently and as advantageously as possible to prevent it from fraying. It should, however, be pointed out that artificial silk which has not been doubled is used for warp because it has more covering power, and even in this state it is better to work with than organzine which is doubled, but also weighted. The weave effects attained by this means are always striking in accordance with the character of artificial silk.